

REVISION OF THE GENUS *HETERONYX*, WITH  
DESCRIPTIONS OF NEW SPECIES.

BY THE REV. T. BLACKBURN, B.A., CORR. MEM. LINN. SOC. N.S.W.

PART V.

APPENDIX.

What I desire to supply in this Appendix is three-fold,—viz., notes on such previously described species of *Heteronyx* as I have failed to identify among the specimens to which I have had access,—amendments of ambiguities, &c., in the body of my work now completed,—and descriptions of species that have come into my hands subsequently to the publication of the parts of the “Revision” referring to the several “Sections” to which they belong.

As regards the previously described species there are a certain number that I have been compelled to disregard altogether,—viz., those in the published descriptions of which there is no account of the antennal structure, and of which at the same time I could not procure authentic types. To have applied the names of such species to any particular specimens could only have been guess work. They are the following:—*infuscatus*, Macl., *pallidulus*, Macl., *parvulus*, Macl., *pubescens*, Macl., *ruficollis*, Macl., *subglaber*, Macl., *substriatus*, Macl., *subvittatus*, Macl., *transversicollis*, Macl. One of these (*pubescens*) is a nom. præocc. The rest occur in localities distant from those in which any of my new species were taken, and (as most species of *Heteronyx*

seem to have a very limited area of distribution) this points to the probability of their all being distinct from any I have described.

After deducting the above 9 species as being (to me at least) incapable of identification, and allowing for several cases of synonymy, there remain 36 descriptions known to me as anterior to my work, all of which I believe to represent good species. Of these I have succeeded in identifying only 13 with insects before me, and these will be found referred to in their places in my work.

Of the remaining 23, 9 are from Tasmania and are very likely to be confined to that island (whence I have described only one new species) and 2 are from Raffles Bay, another isolated locality likely to produce species different from any I have seen. I have nothing before me agreeing satisfactorily with the description of any of them.

There then remain 12 species which (although I have been unable to identify them as represented among those before me) might appear likely on *a priori* grounds to be present there. Concerning 8 of these the descriptions supply sufficient information to enable me to feel fairly confident that I have not seen them; they are *holomelenus*, Blanch., *laticeps*, Burm., *pellucidus*, Burm., *planatus*, Burm., *proximus*, Burm., *rubriceps*, Blanch., *rufomarginatus*, Blanch., *unguiculatus*, Burm.

The remaining 4 (viz., *laticollis*, Blanch., *nigritus*, Blanch., *pilosellus*, Blanch., *oblongus*, Blanch.), are quite insufficiently described by their author, and it is possible that I have re-described some of them.

The most convenient method, in adding a last word here and there to correct faults and furnish descriptions of species that have come into my hands subsequently to my having dealt with the aggregates to which they belong, will be to divide the species into groups (following the same classification as previously), and discuss those groups separately. I shall take them thus:—

[Section I.]—Species with the labrum entirely and considerably below the plane of the clypeus, the clypeus itself being evenly reflexed all round its free margin, and at most feebly emarginate.

- A. Antennæ 8-jointed... Group I.
- B. Antennæ 9-jointed..... Group II.

[Section II.]—Species having the labrum much exposed to view from above (through profound emargination of the clypeus or other causes) but not rising above the level of the clypeus..... Group III.

[Section III.]—Species having the clypeus more or less overtopped by the labrum.

- A. Antennæ 8-jointed.
  - a. Claws bifid ..... Group IV.
  - b. Claws appendiculate..... Group V.
- B. Antennæ 9-jointed.
  - a. Claws bifid..... Group VI.
  - b. Claws appendiculate ..... Group VII.

#### GROUP I.

Here I have to remark that in the "Revision" (Proc. L.S. N.S.W. 1888, pp. 1332-40) I omitted to state categorically that the anterior tibiæ of all the species (except *brevicollis*, Blackb., and *rufopiceus*, Macl.) known to me as belonging to this group have three well-defined teeth externally.

I have also to describe two new species recently received by me.

## H. BOVILLI, sp. nov.

Minus elongatus; postice sat dilatatus; ferrugineus; pilis brevibus adpressis sparsim vestitus; crasse fortiter sat sparsim (clypeo minus sparsim) punctulatus; labro clypeum haud superanti; antennis 8-articulatis; coxis posticis metasterno paullo brevioribus; unguiculis bifidis. [Long. 3-4, lat.  $1\frac{3}{5}$ -2 lines.

The labrum is a little more prominent and upturned than in typical species of this section. The clypeus forms an almost perfectly even and continuous surface with the rest of the head, the clypeal suture being scarcely visible; its free margins are moderately reflexed and its front is feebly concave in the middle. The prothorax is about  $\frac{3}{4}$  again as wide as long, its base being slightly more than  $\frac{1}{2}$  again as wide as its front, which is moderately concave with moderately prominent and sharp angles; the sides are feebly arched (almost parallel behind the middle), the hind angles well defined, the base is gently bisinuate and consequently but little lobed hindward in the middle. The elytra are scarcely wrinkled transversely, their lateral fringe being normal, their apical membrane very well-defined. The whole upper surface is strongly and coarsely, but not closely, punctured (the clypeus more closely, the pygidium more feebly, than the rest); the punctures so spaced that about 10 or 12 of average distance would occupy the middle line down the prothorax. The hind coxæ are a little shorter than the metasternum and decidedly longer than the 2nd ventral segment. The puncturation of the under surface is strong and somewhat even, but in all parts becoming less close towards the middle. The ventral series consist of fine hairs and are but little conspicuous. The lævigata antero-internal space on the hind coxæ is but feebly defined. The hind femora are moderately wider than the intermediate, their inner apical angle strongly defined. The three external teeth of the front tibiæ are very strong and sharp, the uppermost being about half the size of the 2nd. The hind claws are minutely bifid, the produced piece of the basal portion being much thicker than, and about as long as, the apical piece.

In the tabulation of the 1st section of *Heteronyx* (Proc. L.S. N.S.W. 1888, pp. 1328, &c.) this species would fall under "C." (line 3, p. 1329), its companions under that letter being *fulvo-hirtus* and *badius*; the hind claws of the former of these are appendiculate (the produced apex of the basal piece being very much smaller than the apical piece), while the latter is an infinitely more closely punctulate insect than *H. Bovilli*.

N. Territory of S. Australia; taken by Dr. Bovill.

H. ADVENA, sp.nov.

Minus elongatus; postice vix dilatatus; ferrugineus, antennarum clava testacea; pilis minus brevibus adpressis minus sparsim vestitus; sat fortiter (postice gradatim minus fortiter) punctulatus; labro clypeum haud superanti; antennis 8-articulatis; coxis posticis metasterno vix brevioribus; unguiculis bifidis; segmentis ventralibus apicalibus vix perspicue punctulatis.

[Long.  $3\frac{3}{5}$ , lat.  $1\frac{4}{5}$  lines.

The description of the head of *H. Bovilli* will apply to this species, subject to the remark that the clypeus is not at all emarginate in front. The description of the prothorax (disregarding puncturation) will apply moreover, except that in this species the sides are a little more arched and the hind angles are quite rounded off. The transverse wrinkling of the elytra is little noticeable, their lateral fringe normal, their apical membrane obscure. The puncturation of the head is coarse, strong, and rather close,—that of the prothorax and elytra successively feebler, that of the pygidium quite obsolete; the punctures on the prothorax are spaced so that about 14 or 15 of average distance apart would run in a line down the middle. There is some indication in this species of a sutural stria and the suture is slightly elevated, while in *H. Bovilli* the suture is non-striate and flat. The proportions of the various parts on the underside are almost as described above (vide *H. Bovilli*), but the hind coxæ are a little longer. The puncturation of the metasternum

and hind coxæ is a little feebler than in *H. Bovilli*; the whole undersurface is minutely coriaceous and therefore less nitid, the ventral segments are almost without a trace of distinct puncturation, the ventral series are stout and conspicuous, the antero-internal tooth of the hind femora is very feeble, the uppermost tooth on the front tibiæ is much less than half the size of the 2nd, and the hind claws are bifid less minutely, the produced apex of the basal piece being distinctly smaller than the apical piece.

This species can be distinguished from all the others (having 8-jointed antennæ) of the 1st section by its impunctulate ventral segments. If its stout ventral series should place it in the group A (Proc. L.S.N.S.W. 1888, p. 1328) it would fall under FF (same page) with *frontalis*; among the species of BB (p. 1329) it would have to follow *badius*,—thus,

“DDD. Clypeus not at all emarginate in  
front ..... *advena*, Blackb.”

Locality uncertain; but I believe it to be Central Australia.

#### H. LILLIPUTANUS, sp.nov.

Minus elongatus; postice leviter dilatatus; rufo-piceus, antennis testaceis; pilis sat elongatis minus dense vestitus; crasse subrugulose punctulatus; labro clypeum haud superanti; antennis 8-articulatis; coxis posticis metasterno parum brevioribus; unguiculis appendiculatis. [Long. 2 (vix), lat. 1 line.

The clypeus is evenly reflexed all round and its free outline forms a continuous even curve (the labrum being entirely below it); its plane is not evenly continuous with that of the rest of the head. The prothorax is half again as wide as long and its base (which is bisinuate and rather strongly lobed hindward in the middle) is more than half again as wide as the front which is moderately emarginate with moderately produced and sharp angles; the sides are rather strongly rounded, the hind angles quite

rounded off. The elytra are devoid of striation, their transverse wrinkling is very conspicuous, their lateral fringe normal, their apical membrane obsolete. The puncturation of the whole upper surface is coarse and rough. The puncturation of the undersurface is strong; on the metasternum it is moderately close but becomes less so hindward. The hind coxæ are not much shorter than the metasternum and are very much longer than the 2nd ventral segment. The ventral series consist of long fine hairs and are moderately conspicuous. The hind femora are considerably wider than the intermediate with their inner apical angle very little developed. The hind claws are appendiculate, the basal piece about twice as large as the apical with its inner apex little produced. The front tibiæ are much compressed and dilated, with three large obtuse teeth on their external margin, of which the uppermost is about half as large as the 2nd.

This minute species seems to be allied to *H. hirtuosus*, Blackb., from which, however, it differs by many structural characters. In the tabulation it would stand side by side with *H. spretus*, Blackb., from which its small size will at once distinguish it.

A single example in my own collection; taken in the Adelaide district.

The following previously described species belonging (with more or less certainty) to this group (*i.e.*, having the labrum entirely below the clypeus and 8-jointed antennæ) I have not been able to identify,—*viz.*, *rotundiceps*, Blanch., *spadiceus*, Burm., and *unguiculatus*, Burm. Of these *rotundiceps* is said to be iridescent (differing thereby from all known to me in the group) and to occur in "Eastern New Holland;" its size is not specified. *H. spadiceus* is from Swan River (I have not seen any species of the group from Western Australia), its length is 4 lines, and it is described as entirely glabrous; the description of the relation of clypeus and labrum is vague,—the latter being merely said to "protrude in front of" the former,—but it would probably fall in this group; I do not think anything I have seen can be identical with it. *H. unguiculatus* is said to be from "New Holland,"

without more definite indication of locality ; its labrum is said to rise to the level of the clypeus, but nevertheless the clypeus to be scarcely even sinuous in front ; it appears to be a small species (long. 3-3½ lines), of a brownish-testaceous colour, with close fine puncturation, bidentate front tibiæ and strongly bifid claws.

## GROUP II.

In the tabulation of the species (Proc. L.S.N.S.W. 1888, pp. 1329-31) I find a slight ambiguity of expression ;—certain species being divided as having “E—the hind coxæ considerably (EE scarcely, if at all) shorter than the metasternum on the external margin.” *H. solidus* (under the former initial) is separated from *H. Beltanae* and *satelles* as having the hind coxæ “very little” shorter than the metasternum. The difference here indicated very satisfactorily separates the species, and the “very little” of *solidus* is quite distinct from the “scarcely, if at all” of *equalis* and *holosericeus*,—but as it is undoubtedly obscurely worded in my tabulation I suggest the substitution (p. 1330, lines 26-30) of the following,—

- L. Hind angles of prothorax (viewed from above) appear well-defined [size more than 4 lines] ..... *solidus*, Blackb.
- LL. Hind angles of prothorax (from all points of view) appear quite rounded off [size less than 4 lines] .....

Neither am I quite satisfied with my treatment in this group of the claw structure which (since the issue of Part I. of the “Revision”) I have found to be more useful for distinction of species than I at first thought. I think it well therefore now to supply the following more detailed and accurate information and to base it upon the *hind* claws. The claws more particularly referred to in the tabulation in Part I. were those of the *front* legs,—but as



these generally vary with the sex they furnish less reliable specific characters.

- A. Hind claws strongly "bifid,"—*i.e.*, having the apex of the basal piece produced in a conspicuous process more than half as large as the whole of the apical piece—*breviceps*, *rugosipennis*, *solidus*, *Beltanæ*, *corpulentus*, *holosericeus*, *piceoniger*.
- B. Hind claws bifid (as above), but only minutely and at the apex—*variegatus* and *Darlingensis*.
- C. Hind claws "appendiculate,"—*i.e.*, having at the inner apex of the basal piece a free projection less than half as large as the apical piece.
- a. The appendiculation minute and close to the apex of the claw—*æqualis*, *testaceus*, *satelles*.
  - b. The apical piece fully as long as the basal piece—*Froggatti*.
  - c. The appendiculation normal—*i.e.*, the basal piece a little longer than the apical and with its apical process more or less feeble—*piceus*, *horridus*, *gracilipes*, *Victoris*, *occidentalis*, *pubescens*, *Randalli*.

#### H. PICEONIGER, Macl.

Since the publication of Part I. of the "Revision" I have received from Dr. Bovill examples of a *Heteronyx* which agrees very well with the description of *H. piceoniger*, Macl. Mr. Froggatt of Sydney has done me the favour of comparing a specimen with the type and considers it the same species. In my tabulation (Proc. L.S.N.S.W. 1888, pp. 1328-31) it would fall side by side with *H. corpulentus*,\* (HH. p. 1331) from which it may be at once distinguished by the exceptionally coarse and sparse puncturation of its head.

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\* It should be noted however that the erect hairs on the elytra are scarcely to be called "long" (*vide* "GG." line 14, p. 1331) in *H. piceoniger*.

## H. PUBESCENS, Er.

I have before me an example taken in Tasmania by Mr. T. G. Sloane, which I cannot doubt is this species, as it agrees perfectly with Erichson's description. M. Lacordaire (Gen. Col. III., p. 232, note) states that *H. pubescens* has simple claws, on the strength of which I expressed the opinion (Proc. L.S.N.S.W. 1888, p. 1328), that it could not be a true *Heteronyx*; but with the present specimen before me (which has distinctly appendiculate claws, the basal piece about twice as large as the apical), I am compelled to conclude that Lacordaire was mistaken. In Masters' Catalogue the species is assigned to *Caulobius*. In my tabulation *H. pubescens* would fall side by side with *H. gracilipes*, Blackb., from which it differs *inter alia* by the very much more obtuse teeth of its front tibiæ, the uppermost of them being subobsolete.

## H. RANDALLI, sp. nov.

Minus elongatus; postice vix dilatatus; ferrugineus; pilis depressis minus dense vestitus; subtilius minus crebre (capite crasse rugulose) punctulatus; labro clypeum haud superanti; antennis 9-articulatis; coxis posticis metasterno sat brevioribus; unguiculis appendiculatis. [Long.  $3\frac{2}{3}$  (vix), lat.  $1\frac{2}{3}$  lines.

The clypeus is evenly reflexed all round and its free outline forms a continuous curve scarcely flattened or subsinuate in front (the labrum being entirely below); its plane and puncturation are almost perfectly continuous with the rest of the head, from which it is separated by a very obscure suture. The prothorax is about  $\frac{3}{4}$  again as wide as long, its base (which is scarcely bisinuate but considerably lobed hindward all across) something less than  $\frac{3}{4}$  again as wide as its front which is only moderately emarginate with angles not very sharp nor strongly produced; the sides are moderately rounded and the hind angles are quite rounded off. The elytra have scarcely a trace of striation even along the suture, their transverse wrinkling is feeble, their lateral fringe is normal,

their apical membrane well defined. The puncturation (except on the head) is neither strong nor close, a little stronger and less close on the prothorax than on the elytra; on the prothorax the punctures are spaced so that about 17 of average distance apart would lie down the middle line. On the underside the hind coxæ are much shorter than the metasternum but not very much longer than the 2nd ventral segment; the metasternum is rather finely and sparingly punctured, the hind coxæ more coarsely, but with a well defined lævigata antero-internal space. The ventral segments are rather coarsely punctured, the ventral series consisting of fine hairs and being inconspicuous. The hind femora are moderately wider than the intermediate, their inner apical angle feeble. The hind claws are appendiculate, the basal piece not much longer than the apical and having its inner apical angle fairly defined and sharp. The front tibiæ have three rather blunt external teeth, the uppermost being especially blunt and scarcely half as long as the 2nd.

In the tabulation (Proc. L.S. N.S.W. 1888) this species would fall under "D" (at bottom of p. 1329); from *piceus* and *Froggatti* it differs *inter alia* in the free outline of the clypeus not forming an even curve; from *occidentalis* in the same being feebly sinuate, not strongly emarginate.

Barrow's Creek, N. Terr.; taken by Mr. W. D. Randall.

#### H. DECEPTOR, sp.nov.

Minus elongatus; postice leviter dilatatus; minus nitidus; piceo-niger, antennis palpis tarsisque piceo-ferrugineis; pilis elongatis suberectis confuse vestitus; crebre, sat rugulose, minus fortiter, punctulatus; labro clypeum haud superanti; antennis 9-articulatis; coxis posticis metasterno paullo brevioribus; unguiculis appendiculatis; unguiculorum posticorum parte basali apicali vix longiori. [Long.  $4\frac{3}{5}$ , lat.  $2\frac{2}{5}$  lines.

This species (apart from its shorter and wider form, the greater distinctness of the clypeal suture, the prothorax only about half

again as wide as long and with slightly more rounded sides, 9-jointed antennæ, the long scattered hairs rather thinly—increasingly so hindward—clothing its surface; the absence of a conspicuous red membranous border to the elytra, the much darker colour of the antennæ and palpi, the fine hairs on the legs and underside and which form the ventral series, and the shorter and more slender tarsi) scarcely differs from *H. torvus*, Blackb., the description of which (subject to the foregoing remarks) may be read as applying to it. In one example before me I find a faint indication of striæ on the elytra, in the other none at all; *H. torvus* varies in this respect. It should be noted, however, that I have not seen a female example of this insect. In the tabulation (Proc. L.S. N.S.W. 1888, pp. 1328, &c.), this species would fall side by side with *piceus*, Blanch., from which *inter alia* the long hairs over its upper surface may be taken as a distinction.

Victoria; taken by Mr. T. G. Sloane in Gippsland.

#### H. PICEUS, Blanch.

I have received from Mr. T. G. Sloane a specimen of *Heteronyx* taken on the Blue Mountains which, with much doubt, I am inclined to regard as a very peculiar example of this insect. Its very diminutive size (long.  $4\frac{2}{3}$  lines) is accompanied by a shortening of the hind coxæ, those organs being (not much, but certainly a little) smaller in proportion to the metasternum than in specimens of *piceus* from other localities. The appendiculation of the claws moreover seems to be a little nearer the apex in this example than in typical *piceus*. The resemblance to *piceus* however is too close to justify me in giving a new name on the inspection of a single example.

#### H. VIATOR, sp. nov.

Minus elongatus; postice leviter dilatatus; rufo-ferrugineus, antennis palpisque testaceis; pilis adpressis sat brevibus sat sparsim vestitus; sat fortiter minus crebre (capite crebre rugulose).

punctulatus; labro clypeum haud superanti; antennis 9-articulatis; coxis posticis metasterno sat brevioribus; unguiculis appendiculatis; unguiculorum posticorum parte basali apicali fere duplo longiori. [Long.  $4\frac{2}{5}$ , lat.  $2\frac{1}{5}$  lines.

The clypeus is evenly reflexed all round, the curve of its free outline however being a good deal flattened or truncate in front (the labrum being entirely below it); its plane is moderately distinct from that of the rest of the head with a fairly marked arched suture. The whole head is coarsely and very closely (almost confluent) punctured and bears some longish erect hairs. The prothorax is slightly more than half again as wide as long, its base (which is bisinuate and moderately lobed in the middle) being about half again as wide as its front which is rather strongly concave, with sharp well-produced angles; the sides are moderately arched (at their greatest divergence a little behind the middle), and the hind angles are much rounded off,—scarcely defined from any point of view. The transverse wrinkling of the elytra is rather conspicuous, their lateral fringe is normal, their apical membrane obsolete. The hind coxæ are considerably shorter than the metasternum but only moderately longer than the 2nd ventral segment. The whole undersurface is punctured very similarly to the elytra, the hind coxæ however having a large lævigata antero-internal space. The ventral series consist of fine hairs. The hind femora are moderately wider than the intermediate and have their inner apical angle but feebly defined. The hind claws are appendiculate, their basal piece being about twice as long as the apical. The three teeth on the front tibiæ are fairly strong and sharp, the uppermost being about half as large as the 2nd.

The elytra are punctured a little less closely, and more strongly, than those of *H. gracilipes*. The puncturation of the prothorax (being slightly stronger and sparser than of the elytra) all the more differs from that of *H. gracilipes*. In the tabulation (Proc. L.S.N.S.W. 1888, pp. 1328, &c.) this species would fall side by side with *H. Victoris* to which it is extremely close, but the differently shaped front of clypeus, prothorax more concave in

front and slightly more transverse, decidedly coarser puncturation of ventral segments, &c., together with totally different colour seem to point to specific distinctness. The punctures on the prothorax are spaced so that about 17 of average distance apart would range down the middle line.

Edithburgh; taken by Mr. McDougall.

The following species I have been unable to identify; some (and perhaps all) of them belong to this group.

*H. laticeps*, Burm. A large species (long. 6 lines) said to be of a chestnut colour and to have the apical membrane of its elytra very conspicuous. The description of its puncturation is very obscure, and there is no indication of locality beyond "Australia."

*H. pilosellus*, Blanch. The description of this species is identical with that of *H. piceus* in respect of all characters of any real value for identification. It is therefore quite likely that the species I have treated as *H. piceus* may be this. Both are said to occur in "Eastern New Holland."

*H. planatus*, Burm. Said to occur at Adelaide and to be remarkable for its depressed form (long. 4 lines). I know no species corresponding to this description.

*H. præcox*, Er., *H. tempestivus*, Er. Both from Tasmania. According to Erichson both have 9-jointed antennæ, but Blanchard makes the former the type of a new genus with 8-jointed antennæ and peculiarly shaped labrum, while Lacordaire states that the latter has antennæ of only 8 joints. Under these circumstances it is evident that no species (at any rate unless taken in Tasmania) could be reasonably made to bear these names without having been compared with the original type.

### GROUP III.

This group (identical with my Section II) consists of species that cannot rightly be placed in either of the other sections. The relation *inter se* of the labrum and clypeus is usually as follows:—

the labrum is turned upward as in Section III., but not so strongly that its summit surpasses the level of the clypeus; the clypeus is *strongly* emarginate in the middle (its reflexed margin being carried evenly all round the edge of the emargination) and this emargination opens a gap through which the labrum is very conspicuously discernible; or the clypeus is more nearly truncate in front, the species having it so being distinguishable from nearly all of Section III. by their clypeal outline not having from any point of view a "trilobed" appearance.

As the number of species belonging to this group described in my former paper was small, and I have a good many to add now, I think it will be convenient to give a new tabulation, as follows:—

- A. Antennæ 8-jointed ..... *rubescens*, Blanch.
- AA. Antennæ 9-jointed.....
- \*B. Front of clypeus more or less truncate  
or lightly concave.....
- C. Surface of the elytra normally  
pubescent.....
- D. Hind coxæ very much shorter  
than metasternum, — their  
external hind angles quite  
rounded off..... ..
- E. Clypeus punctured very much  
more closely than the hind  
part of the head..... ..
- F. Prothorax considerably  
wider at base than in  
front..... *granum*, Burm.

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\* *H. granum*, Burm., verges towards "BB" in the form of its clypeus, and *H. obesus* verges towards "B," the clypeus of the latter being scarcely *very much* more deeply excised in the middle than that of *H. granum*. There can be no mistake as to which of these groups any of the other 9 species fall into.

- FF. Prothorax scarcely wider  
at base than in front *diversiceps*, Blackb.
- EE. Head punctured uniformly  
or nearly so..... *equaliceps*, Blackb.
- DD. Hind coxæ not much shorter  
than metasternum,—their  
external hind angles  
sharply defined... .. *quadraticollis*, Blackb.
- CC. Surface of elytra sparsely set  
with very long erect hairs  
rising from shining granules *setifer*, Blackb.
- BB. Middle of free clypeal outline  
deeply, and more or less  
narrowly, excised.....
- C. Head punctured.....
- D. Surface of elytra not set with  
erect setæ.....
- E Summit of labrum consider-  
ably below level of clypeus
- F. Prothorax not much more  
than half again as wide  
as long..... *simulator*, Blackb.
- FF. Prothorax about  $\frac{3}{4}$  again  
as wide as long..... *fissiceps*, Blackb.
- EE. Summit of labrum scarcely  
below level of clypeus
- F. Puncturation of upper  
surface fine and very  
close..... .. *excisus*, Blackb.
- FF. Puncturation of upper  
surface coarse and  
sparse..... .. *obesus*, Burm.



- DD. Surface of elytra set with  
 erect setæ..... *pygidialis*, Blackb.  
 CC. Head lævigata..... *læviceps*, Blackb.

H. SETIFER, sp.nov.

Sat elongatus; minus convexus; postice vix dilatatus; sat nitidus; ferrugineus, antennis, palpisque testaceis; elytris setis longis fulvis erectis (haud pilis brevibus adpressis intermixtis) sparsim vestitus; capite (clypeo crebre rugulose excepto) subtiliter leviter minus crebre, prothorace dupliciter (subtiliter et vix subtiliter) leviter sat sparsim, elytris squamose vix crebre sat crasse nec fortiter, pygidio leviter sat sparsim, punctulatis; labro clypeum haud superanti (hoc antice concavo); antennis 9-articulatis; unguiculis appendiculatis, unguiculorum posticorum parte basali apicali vix longiori; coxis posticis metasterno haud brevioribus.

[Long.  $5\frac{2}{5}$ , lat.  $2\frac{1}{5}$  lines.

The relation of labrum and clypeus *inter se* is such in this species as to render its position in my arrangement very doubtful; the summit of the labrum is scarcely below the level of the clypeus and this latter (though arcuately emarginate in front and with a continuous reflexed margin) has not the deep more or less triangular excision in the middle that is usual in the species of Section II. It is distinguished, however, from nearly all the species of Section III., by the relation of labrum and clypeus being such that from no point of view has the free outline of the head the very slightest "trilobed" appearance,—the middle lobe (*i.e.*, the labrum) from the most favourable point of view appearing to have a concave outline. The clypeus is closely and finely rugulose in strong contrast to the rest of the head and the prothorax, which are finely, smoothly, faintly and not closely punctulate. The prothorax is a little more than half again as wide as long, the base (which is bisinuate and moderately lobed hindward in the middle) not quite half again as wide as the front which is rather strongly concave with sharp fairly well-produced angles; the sides are very little arched, the hind angles much rounded off.

The elytra are punctured considerably more strongly than the prothorax; their transverse wrinkling is fairly defined, their apical membrane obsolete; the setæ are placed more or less in rows on their surface and spring from minute pustules. The hind coxæ are very fully as long as the metasternum. On the under-surface the metasternum is punctured fairly strongly and not very closely, the hind coxæ more feebly and more closely (with a distinct lævigata antero-internal space) the hind body very finely. The ventral series spring from conspicuous pustules and consist of stoutish hairs. The hind femora are much wider than the intermediate and have their inner apical angle scarcely defined. The basal joint of the hind tarsi is much longer than the 2nd joint (a very unusual character). The 3 external teeth of the front tibiæ are moderately strong but not very sharp.

Extremely like *H. granulifer*, Blackb., but differing from it widely in respect of structural characters.

Adelaide district.

H. DIVERSICEPS, sp.nov.

Sat elongatus; postice minus dilatatus; sat nitidus; ferrugineus, pilis sat longis suberectis crebrius vestitus; clypeo crebre fortiter rugulose, capite postice sparsius minus rugulose, prothorace subfortiter sat crebre, elytris crebrius minus fortiter squamose, pygidio ut prothorax, punctulatis; labro clypei superficiem haud admodum attingenti, nihilo minus superne conspicuo; antennis 9-articulatis; unguiculis bifidis. [Long. 3, lat. 1½ lines.

This is another species that seems a little to have been Sections II. and III., the labrum and clypeus being very similar to those of *H. setifer* except that the latter is scarcely at all emarginate in front. Like *H. setifer* it shows no indication (from any point of view) of the outline of the head being trilobed. The clypeus is very distinct from the rest of the head, from which it is separated by an almost straight suture, its front being distinctly reflexed and scarcely emarginate, the labrum projecting forward considerable in front of it, but not quite rising to its level. The

prothorax is rather more than half again as wide as long, its base not much wider than its front, which is moderately concave (slightly bisinuate), with but little produced and not very sharp angles; the sides are gently arched, the hind angles much rounded off, the base being gently convex all across. The elytra are punctured more closely than, but about as strongly as, the prothorax; their lateral fringe is normal, their apical membrane scarcely defined. The hind coxæ do not exceed the 2nd ventral segment in length. The puncturation of the metasternum and hind coxæ is strong and fairly close on the sides, becoming more sparse towards the middle, the latter having an elongate lævigatè antero-internal space. The ventral segments are punctured rather strongly and by no means closely all across; the ventral series are moderately conspicuous and consist of long fine hairs. The hind femora are very little wider than the intermediate, their inner apical angle but little marked. The three external teeth of the front tibiæ are stout and blunt, the uppermost very much less than half the size of the middle one. The apical piece of the hind claws is less than  $\frac{1}{3}$  the size of the basal piece, and about twice as large as the produced apex of the latter.

Perhaps near *H. tempestivus*, Er., or *præcox*, Er., but (apart from the difficulty of the antennæ of those species having been subsequently said to be only 8-jointed) Erichson says that the puncturation of the underside is more or less obsolete, whereas in this insect it is particularly strong and well-defined.

South Tasmania; taken by Mr. T. G. Sloane.

#### H. GRANUM, Burm.

Sir William Macleay has sent me under this name a S. Australian specimen of an insect that I have several times met with in the Adelaide district. The examples I have seen vary in size (long. 2-3 lines). I think it not unlikely to be correctly named, although Burmeister's description is not minute enough to allow of any certainty. The objection to the identification is principally that Burmeister says "labro altissimo," from which it

might be inferred that the labrum strongly overtops the clypeus, whereas in this species it scarcely reaches the level of the upper surface of the same. As, however, the labrum stands out strongly in a forward direction, and its upward directed part is very perpendicular, it has the appearance on a casual glance of being very high.

This insect is so extremely like the preceding (*H. diversiceps*) that the description of that species may be taken to apply to it, with the following modifications:—the clypeus, instead of being evenly truncate in front with a well-defined continuous reflexed margin, has the front edge turned up perpendicularly,—so that if the erect face of the labrum be looked at from in front, the front of the clypeus seems to stand up behind it as another similar erect surface; the prothorax is considerably narrowed forward and is much more strongly lobed hindward in the middle, its puncturation being scarcely different from that of the elytra; the three external teeth of the front tibiæ are stronger and sharper.

#### H. ÆQUALICEPS, sp.nov.

Parum elongatus; postice minus dilatatus; sat nitidus; ferrugineus, pilis sat brevibus adpressis vestitus; capite toto sat æqualiter sat fortiter sat crebre, prothorace elytrisque minus fortiter, punctulatis; labro sat fortiter porrecto clypei superficiem haud attingenti; antennis 9-articulatis; unguiculis bifidis.

[Long.  $2\frac{3}{5}$ -3, lat.  $1\frac{2}{5}$ - (vix)  $1\frac{1}{2}$  lines.

This species is so evidently a close ally of the preceding two that it would seem hardly possible to place it in another section, but it is undeniable that the labrum is not very much more prominent than in some species of Section I. (e.g., *Bovilli*). It (*i.e.*, the labrum) is not protruded forward so much as in the preceding two species, neither does it rise so nearly to the level of the clypeus,—nevertheless it is certainly more prominent and more turned up than in the species that I have placed in Section I. The clypeus is gently but very distinctly emarginate in front, the sides of the

emargination forming a very obtuse angle with each other. The entire head (including the clypeus) is very evenly punctulate. Subject to the above remarks the description of *H. diversiceps* may be read as applying to this species. It must be noted, however, that the clypeal suture is less straight being somewhat conspicuously angulated in the middle, that the prothorax is slightly less transverse and more narrowed anteriorly with the base a little more (and the front a little less) bisinuate, that the hind coxæ are scarcely so short, that the ventral segments are much more finely punctured, that the teeth on the front tibiæ are sharper, and that in the hind claws the produced apex of the basal piece seems a trifle larger.

Mulwala, N.S.W. ; taken by Mr. T. G. Sloane.

#### H. QUADRATICOLLIS, sp.nov.

Minus elongatus ; postice leviter dilatatus ; sat nitidus ; ferrugineus ; pilis adpressis minus brevibus minus sparsim vestitus ; sat crasse minus profunde minus crebre (clypeo sat crebre excepto) punctulatis ; labro sat fortiter porrecto clypei superficiem haud attingenti ; antennis 9-articulatis ; unguiculis posticis appendiculatis, elongatis, gracilibus. [Long.  $3\frac{2}{5}$ , lat.  $1\frac{1}{5}$  lines.

This species seems to be a close ally of the preceding three species although considerably larger than any of them. The head scarcely differs from that of *H. diversiceps* except in being a little wider, with the clypeus slightly more emarginate in front. The description of *H. diversiceps* may be read as applying to this insect with the following additional modifications :—the anterior angles of the prothorax, though scarcely so sharp, are much more prominent, the hind angles of the same are fairly defined, the base is evidently bisinuate and the puncturation is stronger and closer, being almost uniform with that of the elytra ; the hind coxæ are much longer, being considerably longer than the second ventral segment, and (although *decidedly* yet) *not very much* shorter than the metasternum ; the three external teeth of the front tibiæ are

quite sharp; the claws are decidedly longer, those of the hind legs being very slender with the basal piece scarcely twice (and its inner apical projection less than half) as large as the apical piece. In my unique example (a male) the front claws are bifid.

Port Lincoln, S. Australia.

#### H. FISSICEPS, sp nov.

Sat elongatus; postice minus dilatatus; sat nitidus; ferrugineus, pilis sat brevibus adpressis sparsim vestitus; capite toto crebre rugulose sat æqualiter, prothorace pygidioque leviter subtiliter minus crebre, elytris subtiliter sat crebre, punctulatis; clypeo antice profunde triangulariter exciso, labro clypei superficiem haud attingenti; antennis 9-articulatis; unguiculis bifidis.

[Long. 3, lat.  $1\frac{2}{3}$  lines.

The anterior emargination of the clypeus (the reflexed border of which is strong and continuous) is so deep as to indent it not much less than half-way to the clypeal suture which is carinated and very conspicuous; the labrum is scarcely protruded forward and does not rise very near the level of the clypeus, but the deep excision of the latter renders it visible from above. The prothorax is a little more than  $\frac{2}{3}$  again as wide as long, the base (which is moderately convex hindward all across) being about half again as wide as the front, which is moderately concave with fairly well-produced sharp angles; the sides are somewhat feebly arched and the hind angles are much rounded off; the puncturation is fine and lightly impressed, and spaced so that about 18 or 19 punctures of average distance apart would range down the middle line. The puncturation of the elytra is a little closer and a trifle stronger, their transverse wrinkling is little noticeable, their lateral fringe normal, their apical membrane scarcely developed. On the underside the hind coxæ are a good deal shorter than the metasternum; they and it are lightly and somewhat closely, but not finely, punctured. The puncturation of the ventral segments is sparse and so feeble as to be almost obsolete; the ventral series consist of fine hairs and are conspicuous. The hind femora are not

much wider than the intermediate, their inner apical angle being fairly defined. The three external teeth of the front tibiæ are strongly developed, but are not very sharp. The hind claws have a decidedly bifid appearance owing to the apical projection of the basal piece (the basal piece itself being fully twice as large as the apical) standing out very conspicuously, but when examined it is seen to be less than half as large as the apical piece.

Mulwala, N.S.W. ; taken by Mr. T. G. Sloane.

#### H. EXCISUS, sp.nov.

Sat elongatus; postice vix dilatatus; minus nitidus; ferrugineo-piceus, pilis sat brevibus adpressis minus crebre vestitus; crebre subtiliter (capite crassius excepto) punctulatus; clypeo medio fortiter arcuatim exciso, labro clypei superficiem haud attingenti; antennis 9-articulatis; unguiculis appendiculatis.

[Long. 5, lat. 2½ lines.

The clypeus is very peculiar in shape, appearing to have had a small (semicircular) piece cut out of the middle of its front, the cavity thus formed (reaching back about a third of the distance from the front margin to the clypeal suture) having a continuous reflexed margin, and leaving the labrum distinctly visible from above, although the latter does not rise to the level of the clypeus; the clypeus does not quite form a continuous plane with the rest of the head; the clypeal suture is well marked and feebly arched. The prothorax is  $\frac{2}{3}$  again as wide as long, the base (which is scarcely bilobed and only feebly convex hindward) being not quite half again as wide as the front which is deeply concave with sharp strongly produced angles; the sides are gently arched in front and almost parallel behind, the hind angles (viewed from above) sharply rectangular; the puncturation is a little asperate and quite close, so that about 30 punctures or more of average distance apart would range down the middle line. The elytra are punctured smoothly and a little more finely and sparsely than the prothorax; their transverse wrinkling is fine and not very noticeable, their lateral fringe normal, their apical membrane obsolete. The under-

side is punctured about as closely as the elytra, the punctures on the metathorax being a little stronger than those of the elytra, and on the ventral segments scarcely so strong; the puncturation of the metathorax and hind coxæ becomes sparser towards the middle line (the latter having a well defined lævigata antero-internal space), that of the ventral segments scarcely sparser but evidently finer. The hind coxæ are about intermediate in length between the metathorax and 2nd ventral segment. The hind femora are a good deal wider than the intermediate and have their inner apical angles blunt but fairly defined. The ventral series consist of hairs and are not particularly conspicuous. The three external teeth of the front tibiæ are strong and sharp, the uppermost less than half as large as the 2nd. In the hind claws the basal piece is quite twice as large as the apical, its inner apical projection being small.

The puncturation of this species is extremely similar to that of *H. torvus*, Blackb.; compared with that of *H. piceus*, Blanch., it is slightly finer and closer on the elytra, and much closer and more asperate on the prothorax.

Mulwala, N.S.W.; taken by Mr. T. G. Sloane.

#### H. OBESUS, Burm.

I feel little or no doubt of the correctness of my identification of this species, in which I am confirmed by Sir William Macleay. It appears to occur over an exceptionally extended area; I have seen examples from Woodville, Kangaroo Island, Victor Harbour, Port Lincoln (all in S. Australia), and King George's Sound. Structurally it is very close to *H. excisus*, Blackb., but differs very widely in superficial characters, the upper surface being almost glabrous, the puncturation infinitely less close (that of the hinder part of the head and of the prothorax feeble and sparse,—spaced so that about 12 or 13 punctures of average distance apart would range down the middle line of the prothorax,—that of the elytra almost as sparse but much stronger), the uppermost tooth of the front tibiæ smaller and the lower two teeth longer and sharper.



## SECTION III. (GROUPS IV.-VII.).

The limits between this section and the preceding one are not as clearly defined as I could wish, as there are a few species in each section which I have placed there with more or less doubt. However, since all the species whose head presents the appearance of a "trilobed outline" belong to this section with the addition of very few others,—it will be only in respect of a very small number that doubt can arise;—especially as in most or all of those placed in this section and yet not showing indications of a "trilobed outline" of the head,—the labrum rises *very markedly* above the clypeus.

## GROUP IV.

Mr. T. G. Sloane has lately sent me two examples taken at Mulwala, N.S.W., that appear to be identical with my *H. sub-metallicus* from Port Lincoln.

## GROUP V.

## H. DUBIUS, Blackb.

I have recently received from Mr. McDougall (of Moonta) an example which perhaps belongs to this species, though it is smaller than the type (long. 4 lines) and of a much darker colour,—except the antennæ which are testaceous; it differs from the type also in being much more pubescent (the type is an old and probably abraded specimen) with the hind angles of the prothorax appearing slightly more defined, the apical membrane of the elytra a little more apparent and the external teeth of the front tibiæ a little sharper. It was taken near Adelaide.

## H. NASUTUS, Blackb.

In the original description of this species the hind claws were called "appendiculate" without further remark,—but it would be well to note that the claws have very much the appearance of those which I have called "bifid," the inner apex of the basal

piece being very conspicuously produced ; this produced apex however is very slender, and not quite half as large as the apical piece,—but I am not sure the insect would not be more at home among those with bifid claws.

#### H. PINGUIS, sp.nov.

Minus elongatus ; postice dilatatus ; sat nitidus ; niger, elytris piceis, antennis, palpis, pedibusque obscure rufo-piceis ; pilis brevibus adpressis griseis sat sparsim vestitus ; capite crebre, prothorace et elytris minus crebre, sat crasse punctulatis ; pygidio opaco subtiliter subcrebre punctulato ; labro clypeum sat fortiter sat anguste superanti ; antennis 8-articulatis ; unguiculis posticis appendiculatis ; coxis posticis metasterno sat brevioribus.

[Long. 5 (vix), lat.  $2\frac{1}{2}$  lines.

The head is unusually narrow ; its “trilobed” appearance is very well defined, the middle lobe appearing scarcely so long, and about half as wide, as the lateral lobes. The margin of the clypeus is strongly reflexed except in the middle where it is quite obsolete ; the clypeus does not form a continuous surface with the rest of the head from which it is separated by a feebly angular suture. The prothorax is about  $\frac{2}{3}$  again as wide as long, its base (which is feebly bisinuate and moderately lobed hindward in the middle) being about  $\frac{2}{3}$  again as wide as the front, which is rather strongly concave with fairly produced sharp angles ; it is widest near the base ; its sides are gently rounded ; the hind angles appear fairly defined from the most favourable point of view, the puncturation is spaced so that about 15 or 16 punctures of average distance apart would range down the middle line. The transverse wrinkling of the elytra is moderately defined, their lateral fringe normal, their apical membrane very distinct. The hind coxæ are considerably shorter than the metasternum, and considerably longer than the 2nd ventral segment ; they and the metasternum are punctured rather strongly,—somewhat closely at the sides, less so towards the middle,—the lævigata antero-internal space being scarcely defined. The ventral segments are punctured more finely,

—but somewhat evenly all across. The ventral series consist of stout testaceous hairs and are conspicuous. The hind femora are much wider than the intermediate and have their inner apical angle well defined. The external teeth of the anterior tibiæ are strong and blunt, the uppermost very close to and about half as large as the second. In the tabulation (P.L.S.N.S.W. 1889, p. 144) this species would fall under “GG,” though the puncturation of the ventral segments is a little stronger than in *H. crassus*, *Augustæ*, and *Sloanei*; the hind angles of the prothorax are as in *H. Sloanei*, from which the present species differs *inter alia* by its much smaller head.

Sent to me by Sir William Macleay as *H. holomelaenus*, Blanch., but that species is especially stated to have 9-jointed antennæ.

N. S. Wales.

#### GROUP VI.

#### H. POTENS, Blackb.

Among a miscellaneous batch of specimens sent to me some time ago by Mr. Sloane,—taken by him from flood refuse on the banks of the Murray,—I find a specimen which I cannot separate from *H. potens*; it differs, however, from all the numerous other examples I have seen in having the hairs on its upper surface all erect instead of recumbent. Whether the horrors of its situation when it fell into Mr. Sloane’s hands made its hair thus stand on end I cannot say, but certainly it seems to possess no structural character suggestive of its being a distinct species.

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The following species,—appertaining probably to my Section III. of *Heteronyx*,—I have been unable to identify. All of them except *H. unicolor*, Blanch., appear to have 9-jointed antennæ. The first 7 are from Tasmania, and very probable may be confined to that island.

*H. Australis*, Guér. Long. 5 lines. Not among the few Tasmanian *Heteronyces* I have seen. It would not be safe to apply

the name to any species from another locality without seeing the type.

*H. hepaticus*, Er. (stated by M. Blanchard to be identical with *H. Australis*).

*H. fumatus*, Er., *H. glabratus*, Er., *H. unicolor*, Blanch. Long.  $4\frac{1}{2}$  lines. The descriptions are too vague to be identified safely with any specimen not from Tasmania; none of the Tasmanians I have seen agree with them.

*H. striatipennis*, Blanch. (already referred to,—*vide* p. 671).

*H. dimidiatus*, Er. (already referred to,—*vide* p. 668).

*H. obscurus*, Blanch. From Raffles Bay, N. Australia. Long.  $4\frac{1}{2}$  lines. A black species, with the club of the antennæ black; I feel sure I have not seen it.

*H. pilosus*, Blanch. From Raffles Bay. Long.  $3-3\frac{1}{2}$  lines. A pale-coloured, very pilose species; the prothorax very finely, the elytra very deeply punctulate. I feel sure I have not seen it.

*H. pellucidus*, Burm. Long. 3 lines. From S. Australia. I cannot identify this description with any of the numerous S. Australian *Heteronyx* before me. The species seems to be a very distinct one,—of testaceous colour, with the prothorax almost lævigata, elytra fairly strongly punctulate, front tibiæ with 2 well-defined teeth and also a minute notch close to the knee, front claws of ♂ unequal *inter se*.

*H. proximus*, Burm. Long. 5 lines. From W. Australia. Said to be very like *H. agrestis* but even more finely punctured. I have seen nothing from W. Australia agreeing with these characters; the description is not detailed enough to justify its identification with species from other parts of the continent, especially since the presumption is strongly against a W. Australian species of *Heteronyx* occurring elsewhere. *H. obesus* is the solitary instance known to me of such a distribution,—unless the tropical examples of *H. agrestis* (?) referred to on page 688 be

an example in point,—but I am convinced they will prove to represent a distinct species when more material can be examined.

*H. holomelænus*, Blanch. Long. 5 lines. From Eastern Australia (already referred to,—*vide* pp. 1218, 1243). An entirely black insect with the club of the antennæ pitchy-red,—closely punctulate. Perhaps near *H. rhinastus*, Blackb., which however has testaceous antennæ. The note as to the unusual colour of the antennæ is the only mention of a really marked character in Blanchard's description.

*H. laticollis*, Blanch. Long.  $5\frac{1}{2}$  lines. From Eastern Australia. The head and prothorax appear to be much wider than in any species known to me and in other respects likely to be identical. The other characters mentioned in the description are all vague.

*H. nigritus*, Blanch. Long.  $3\frac{1}{2}$  lines. From Eastern Australia. A black species with testaceous antennæ and palpi, and pitchy or reddish legs; so far suggestive of *nigrinus*, Blackb.,—but the species as compared with the preceding is said to be “planior” and the elytra are called “fere planis” which seems to remove it far from my *nigrinus*.

*H. oblongus*, Blanch. Long.  $4\frac{1}{2}$  lines. From Eastern Australia. There is no salient character mentioned in the description of this insect which would apply to not a few of the examples before me; I cannot identify it with any one in particular. The species appears to be of a brownish-red colour, to have some ashy pubescence,—the prothorax to be very slightly wider than the elytra (if this is strictly correct I am convinced that I have not seen the species) and finely punctulate,—the elytra to be finely punctulate-rugulose, and the pygidium closely punctulate. This is all the information contained in the description.

*H. ovatus*, Blanch. Long. 3-4 lines. From Eastern Australia and Tasmania. Notwithstanding its name the form of this species is said to be “oblongus.” The description is almost in the same words as that of *H. oblongus*,—from which it appears to differ by being slightly smaller, with less silky pubescence and the prothorax

scarcely so wide as the elytra. Such statements as the last of these are quite useless unless they be founded on exact measurements. I know no *particular* species that agrees with this description though it would come near fitting a good many.

*H. rubriceps*, Blanch. Long. 6 lines. From Eastern Australia. Prothorax said to be wider than elytra, and elytra almost flat,—head appears to be conspicuously reddish. I have seen no large species presenting these characters.

*H. rufo-marginatus*, Blanch. Long.  $4\frac{1}{2}$ -5 lines. From Eastern Australia. The conspicuously red margin of the elytra and prothorax would seem to distinguish this species strongly from all known to me. It is perhaps not unlike *H. marginatus*, Blackb., following the description of which some remarks on it will be found.